

In re patent applicatio Liu, et al  
Invention: MESOPOROUS SILICA FILM FROM  
SOLUTION CONTAINING A SURFACTANT AND  
METHODS OF MAKING SAME  
Filing Date: April 18, 2000  
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Marger Johnson & McCollom, P.C.  
1030 S.W. Morrison  
Portland, OR 97205  
(503) 222-3613  
Attorney's Do. No. 1941-76

#3

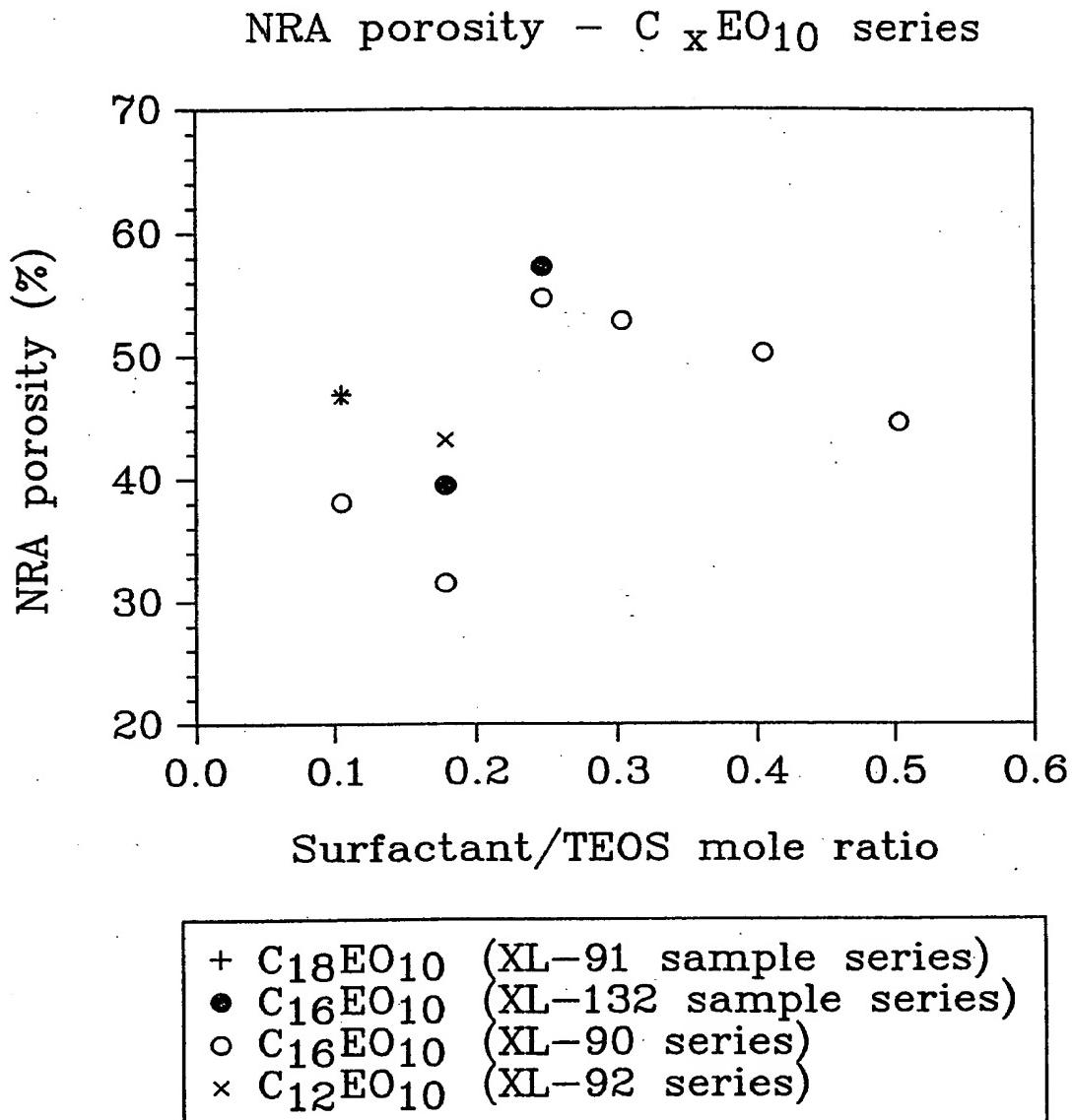


Fig. 1

$C_{12}EO_{10}$  based Films  
Surfactant/TEOS mole ratio = 0.17

Effect of Dehydroxylation Treatments on  $k^1$

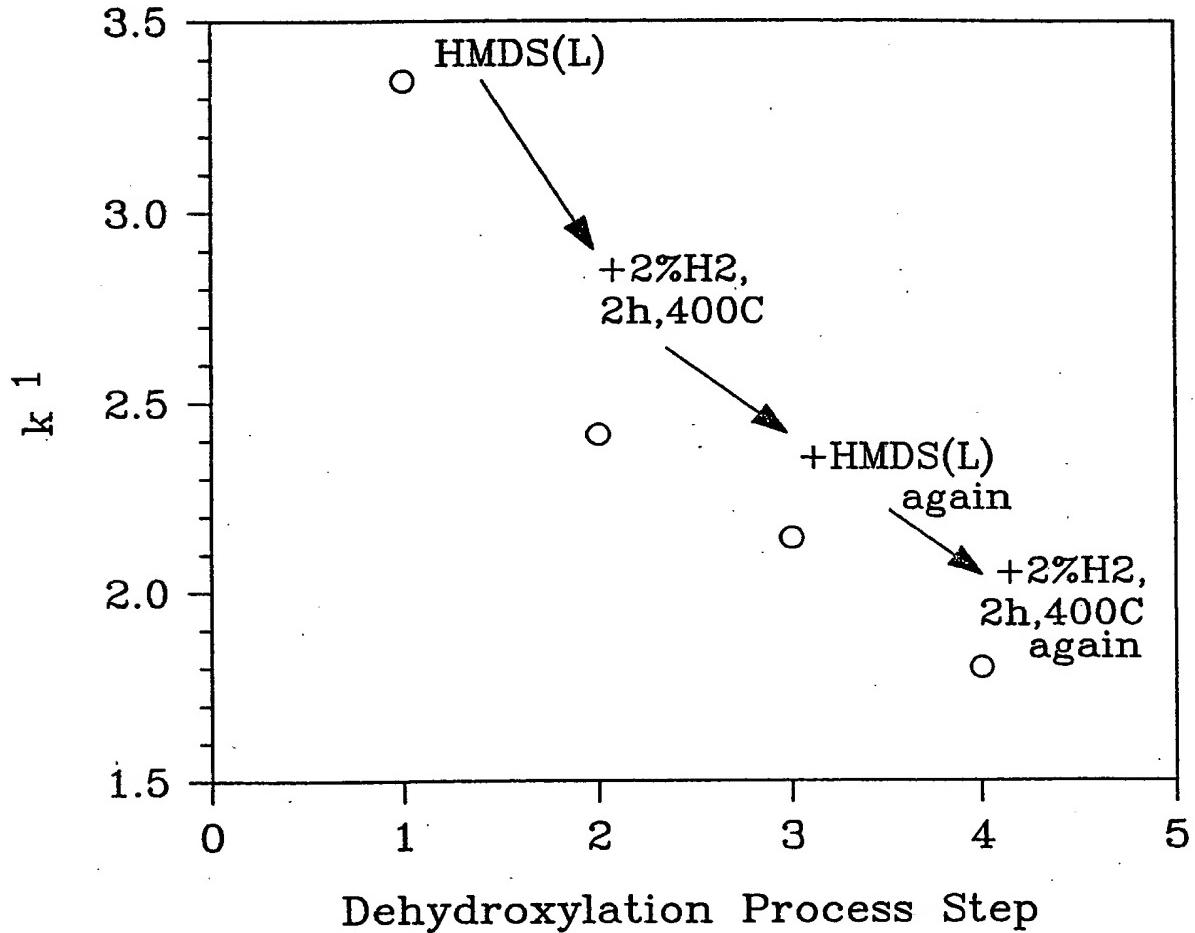


Fig. 2

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$C_{16}EO_{10}$  based Films  
Surfactant/TEOS mole ratio = 0.3

Effect of Dehydroxylation Treatments on  $k^1$

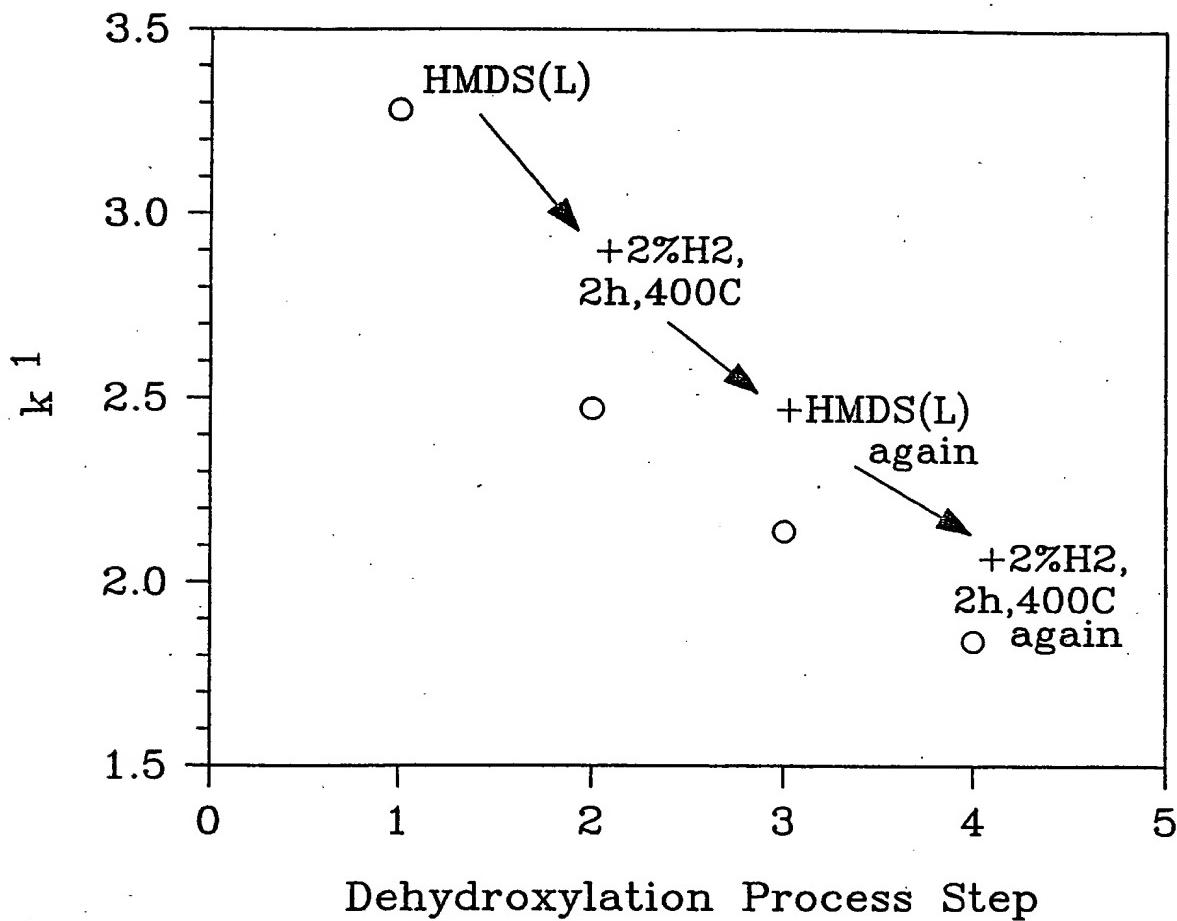


Fig. 3

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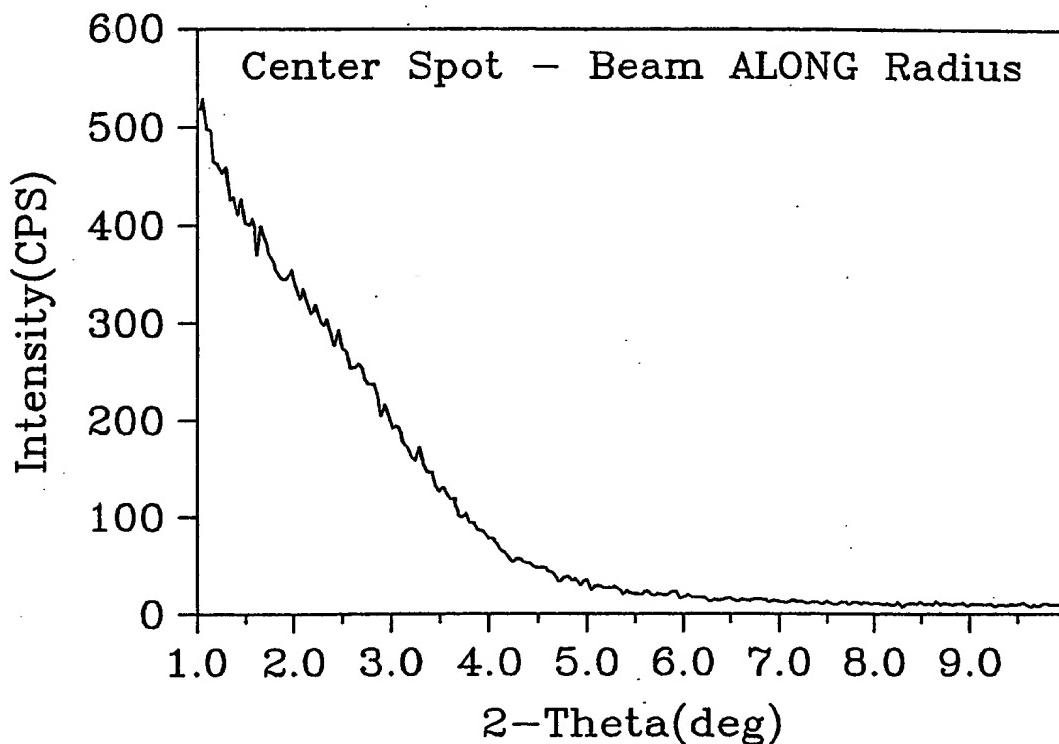


Fig. 4a

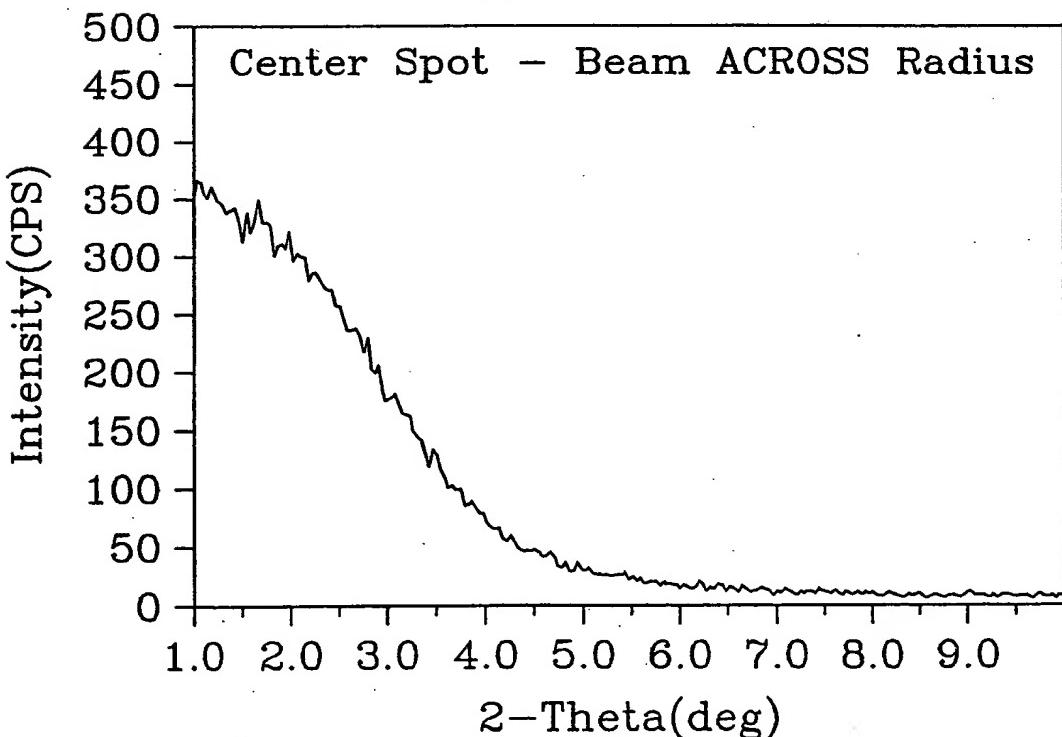


Fig. 4b

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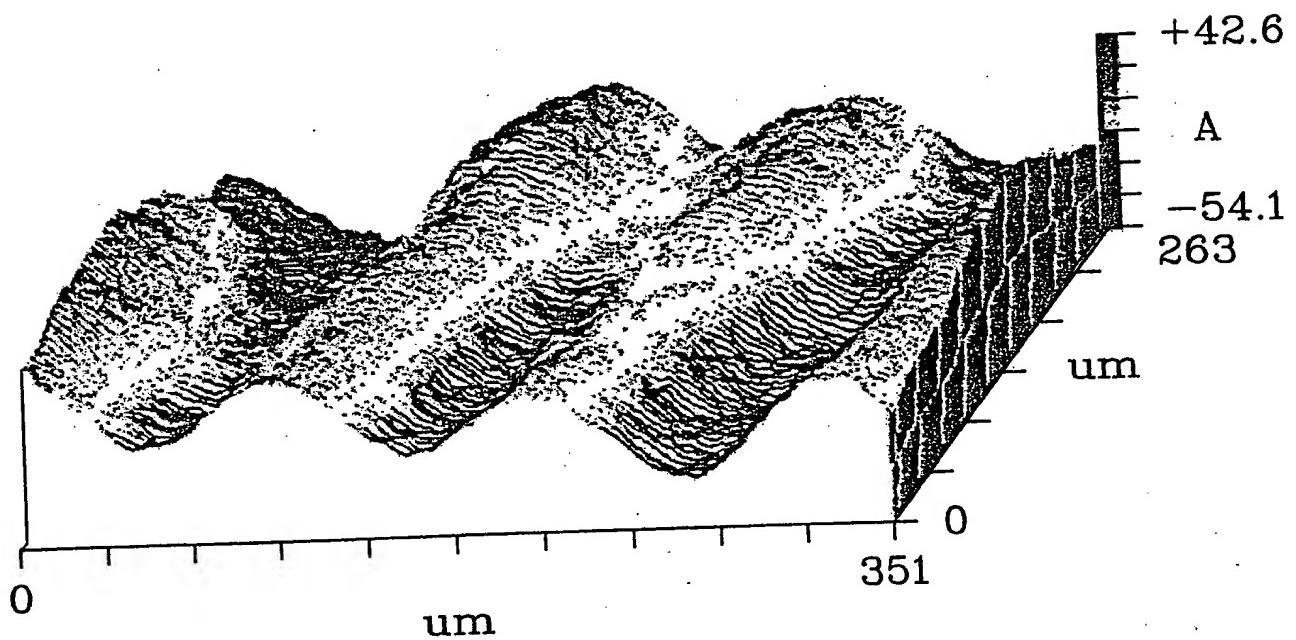


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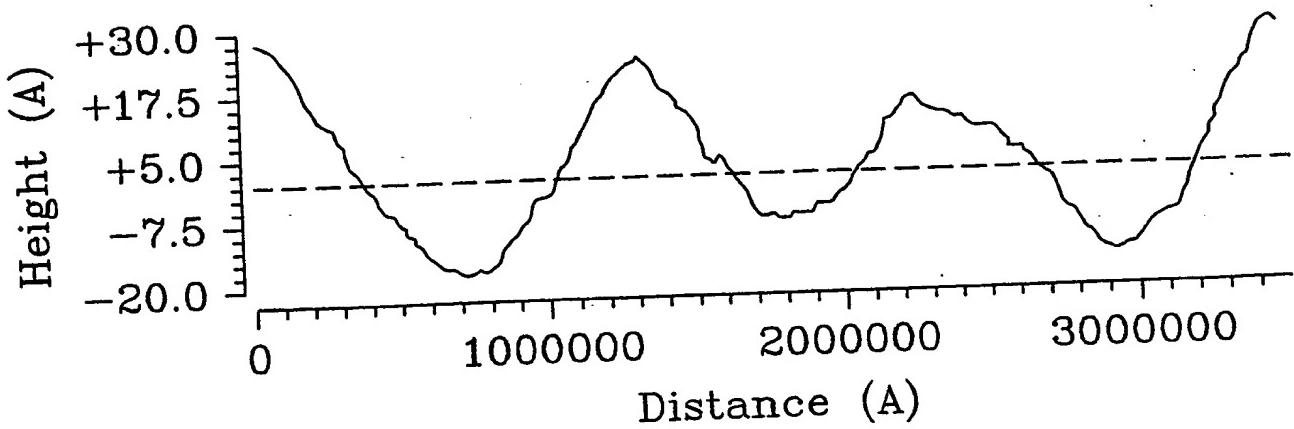
**Fig. 5**

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*Fig. 6a*



*Fig. 6b*

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Modulus between 14 and 17 GPa  
obtained for 50-300 microNewton loads

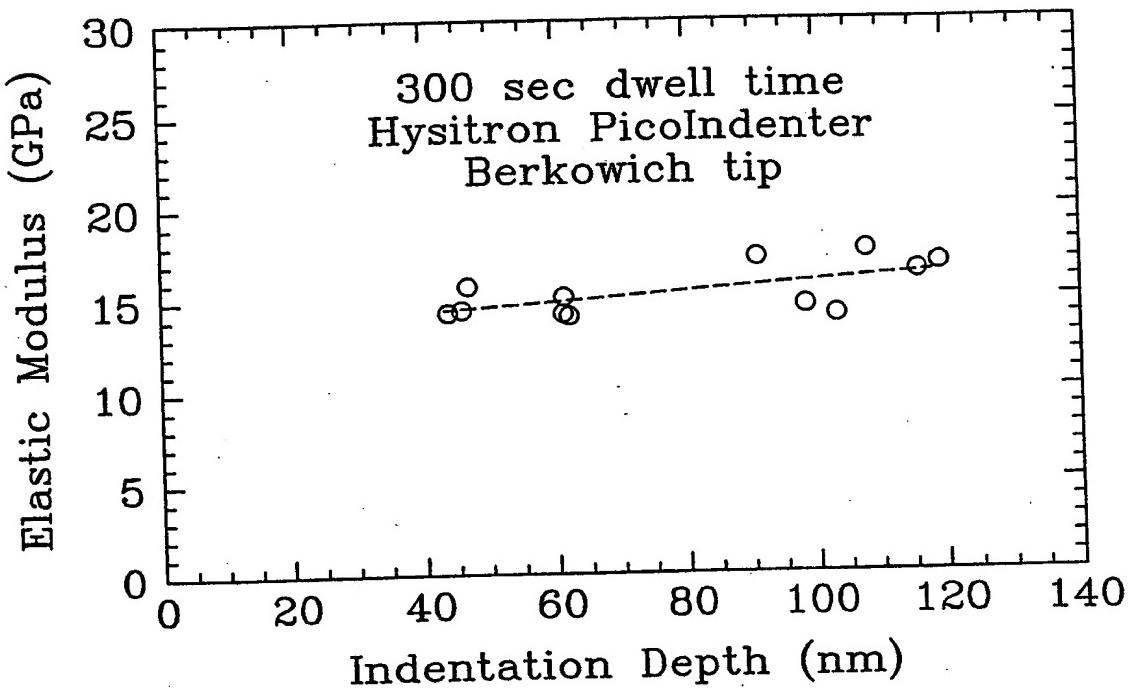


Fig. 7

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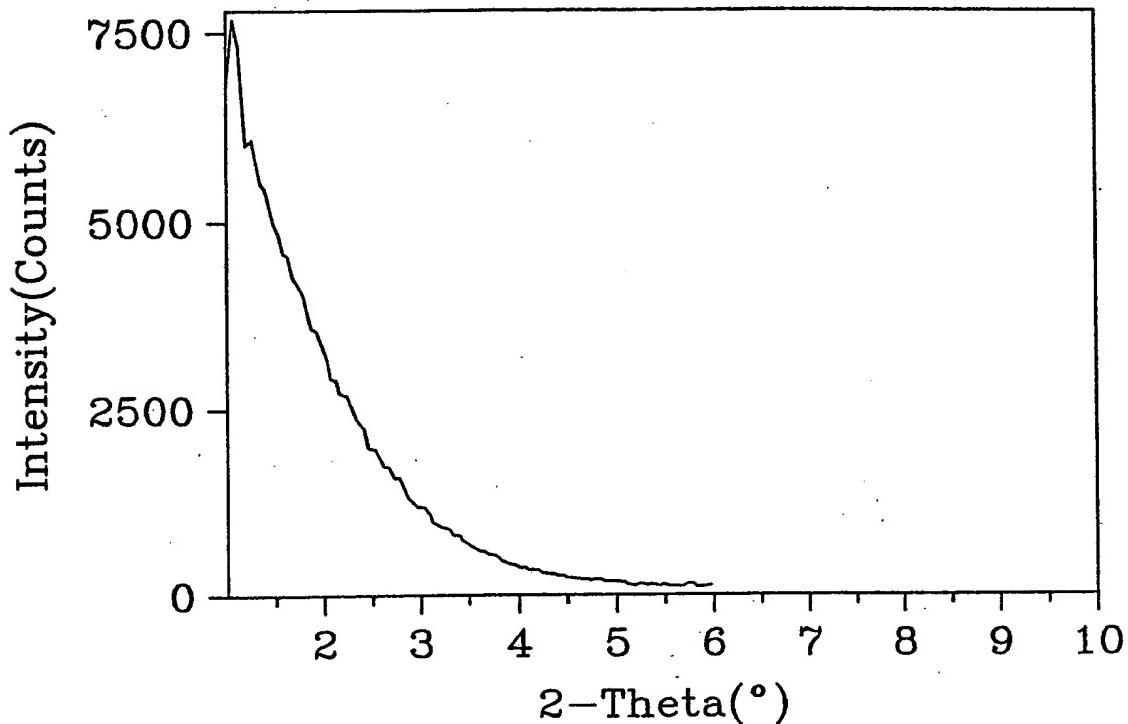


Fig. 8a

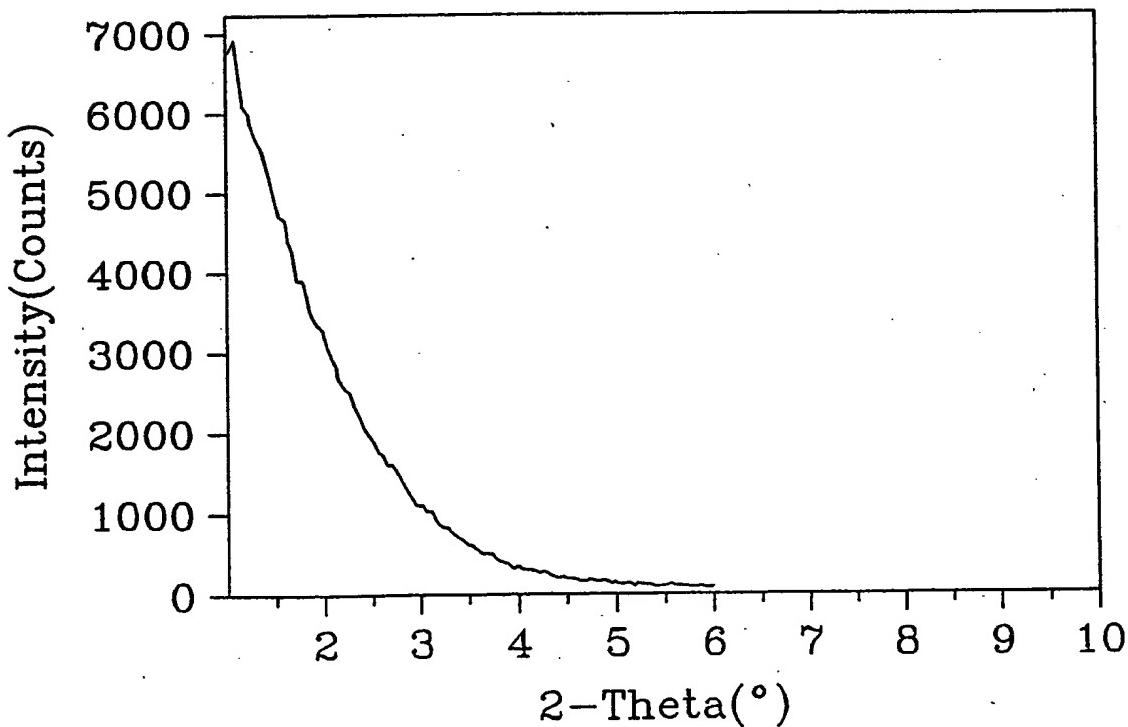
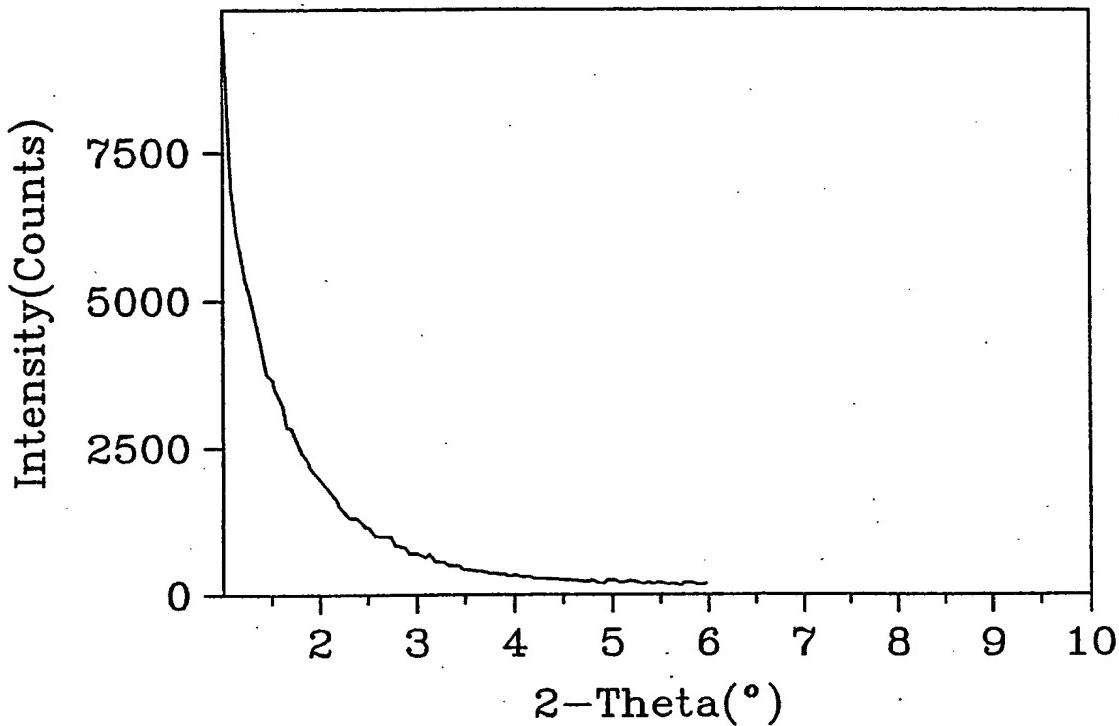


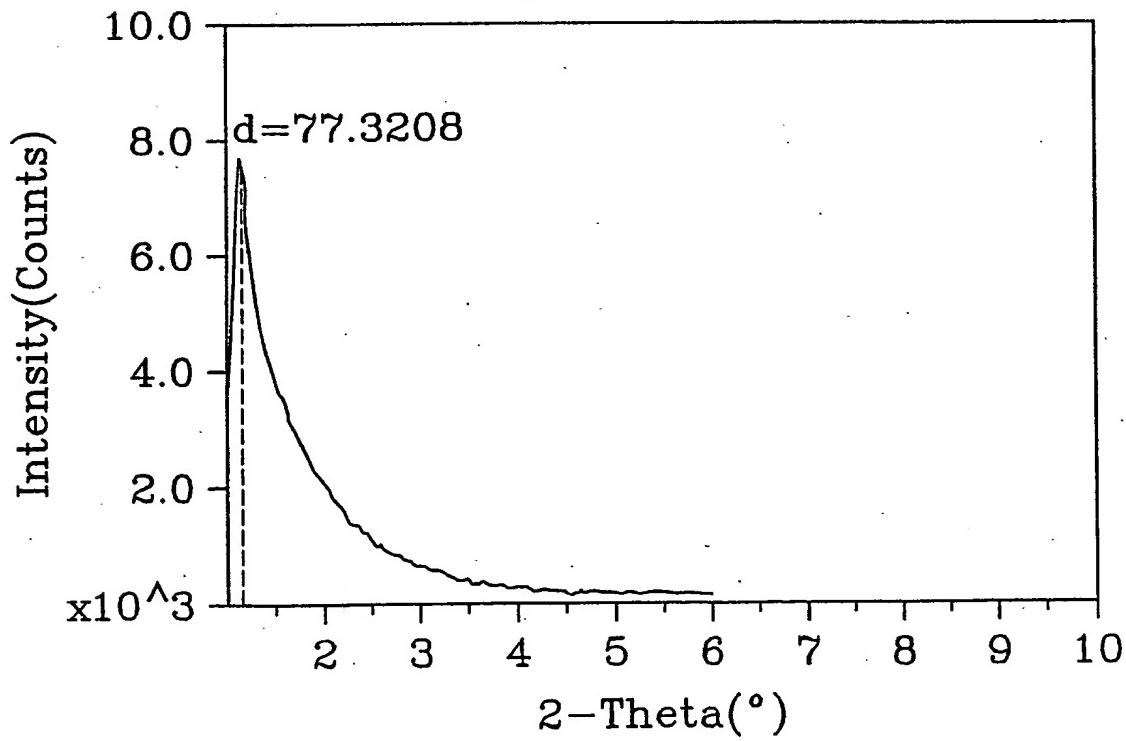
Fig. 8b

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*Fig. 9a*



*Fig. 9b*

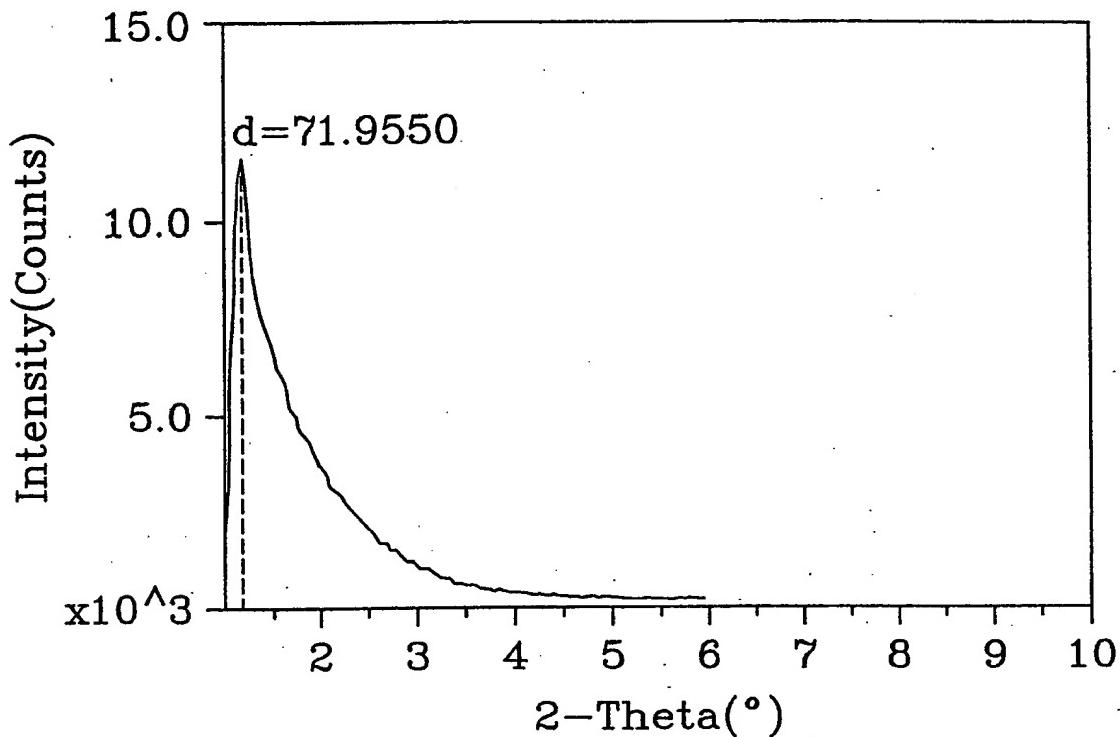


Fig. 10a

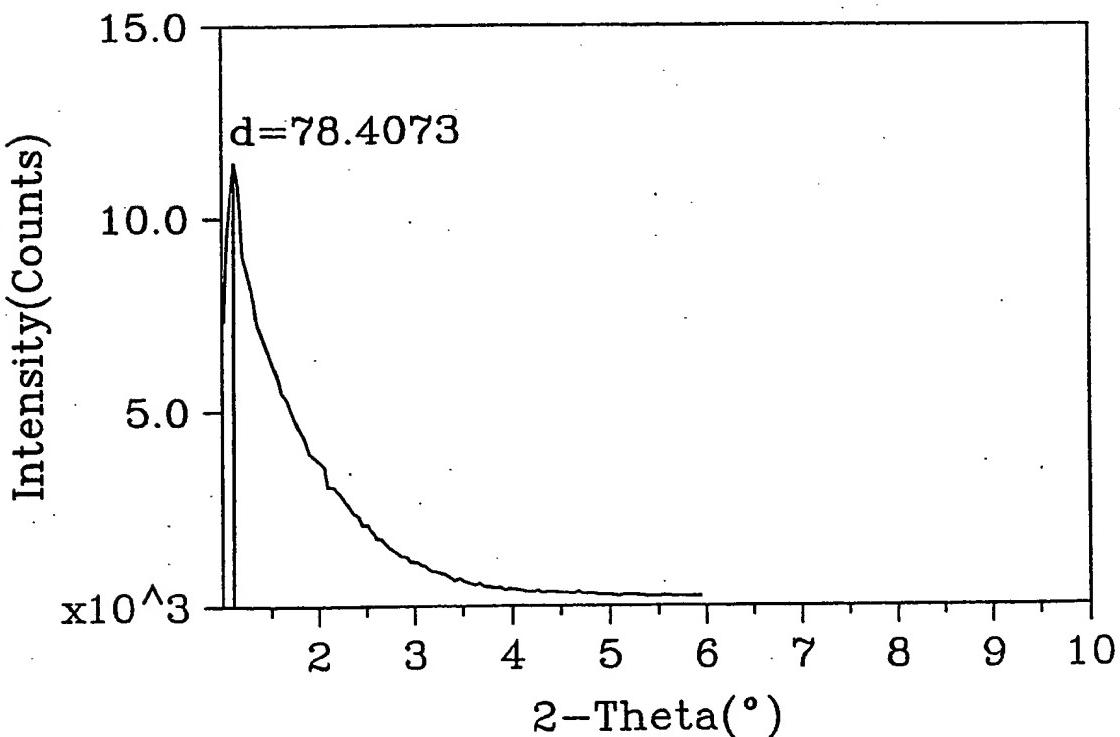


Fig. 10b

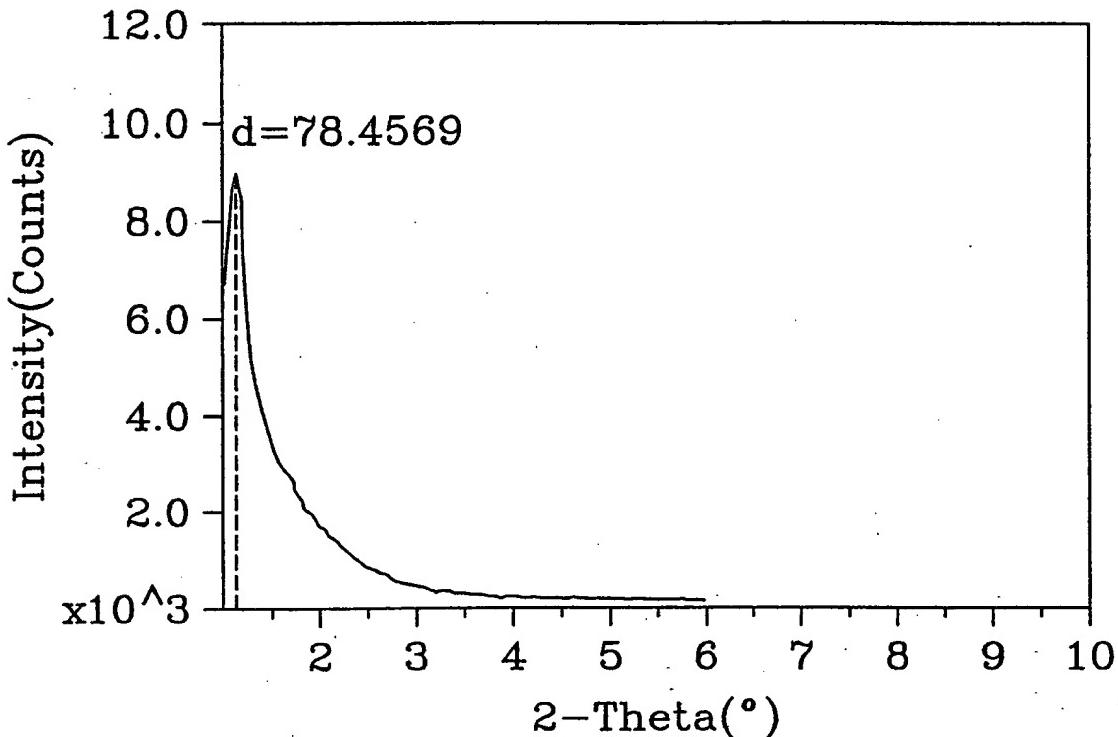


Fig. 11a

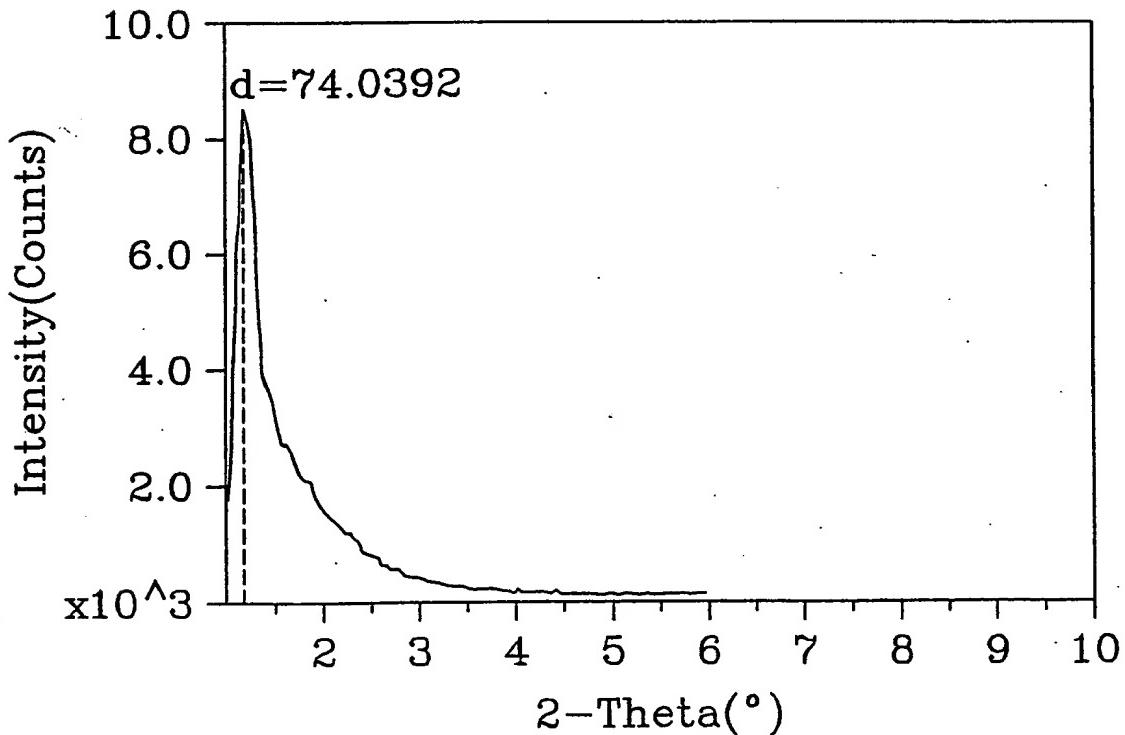


Fig. 11b

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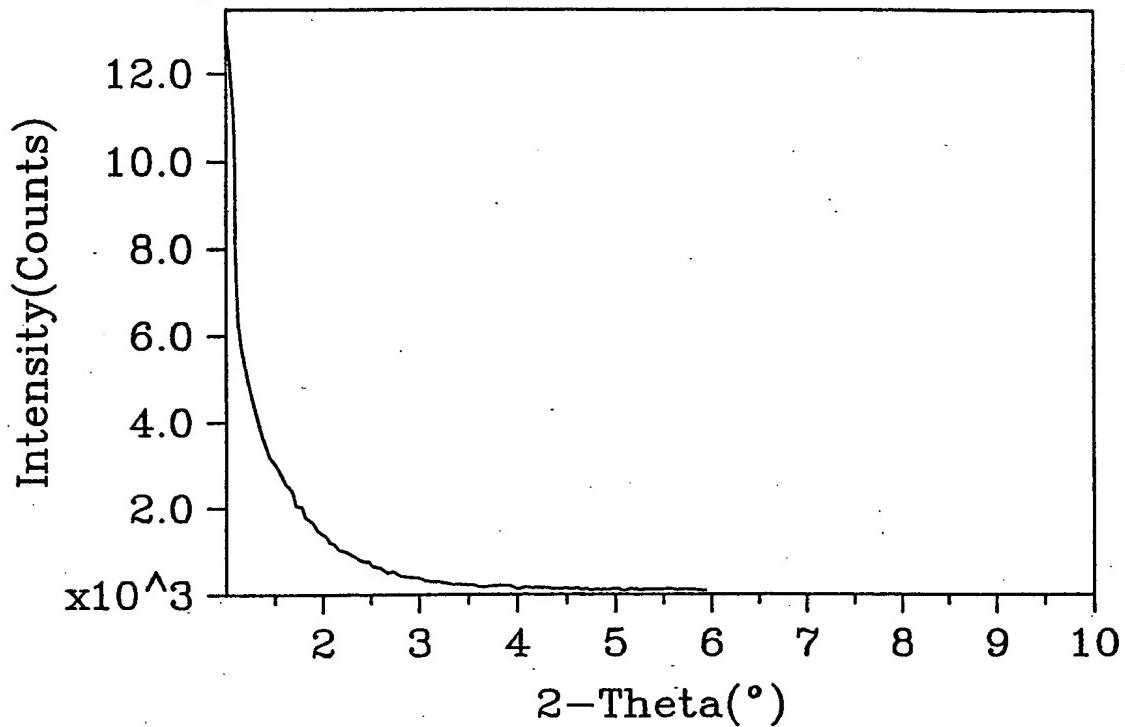
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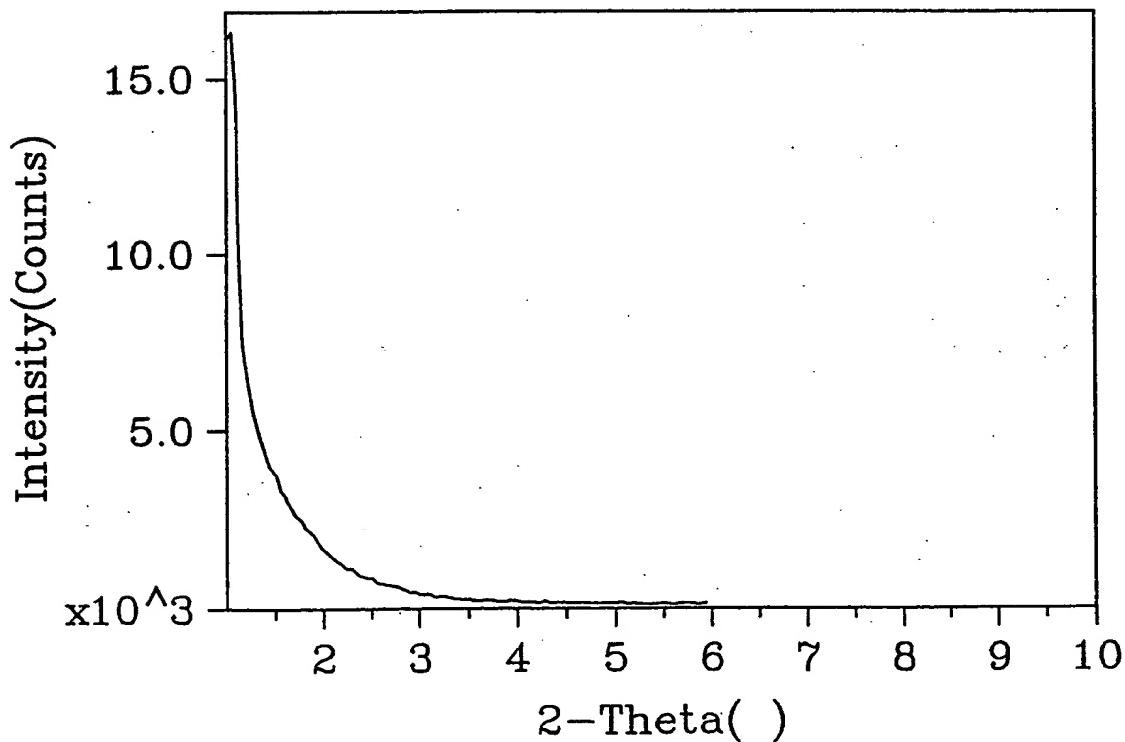
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*Fig. 12a*



*Fig. 12b*

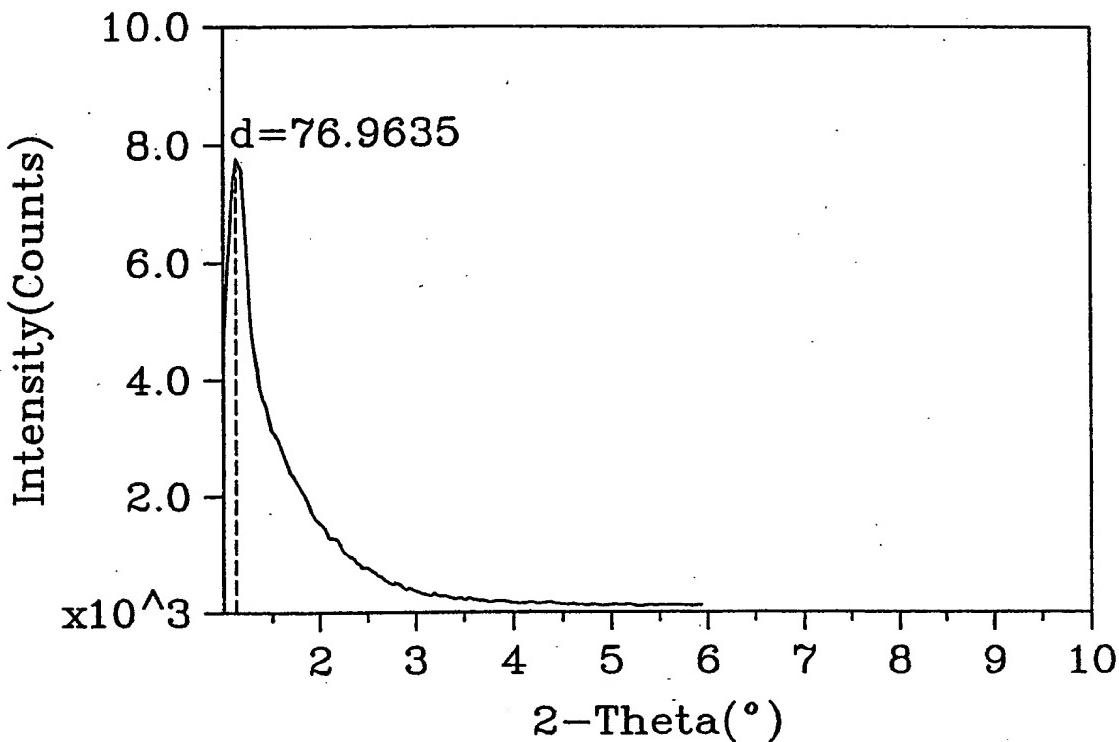


Fig. 12c

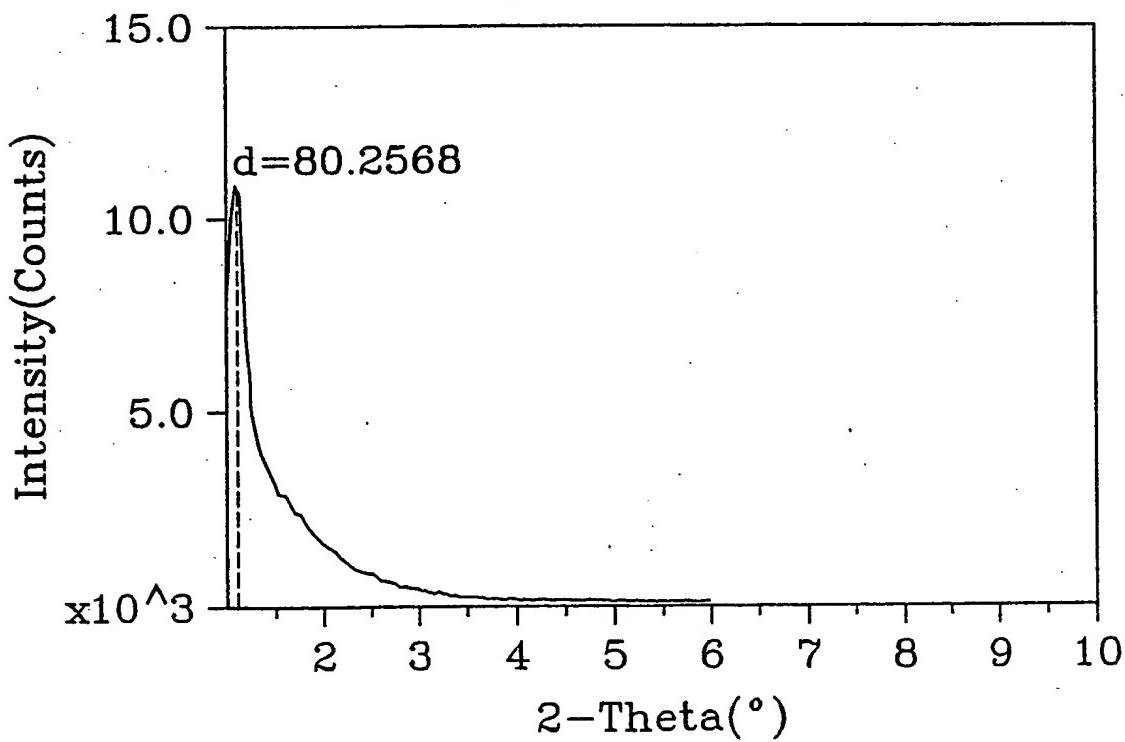
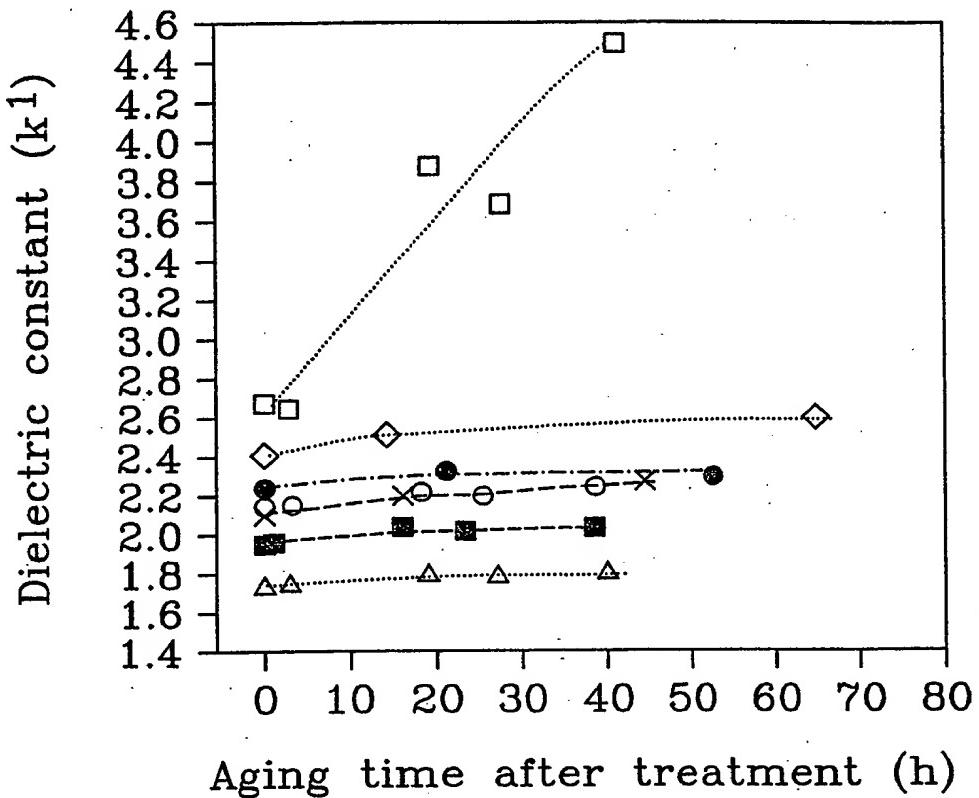


Fig. 12d



- 2%H<sub>2</sub>,2h,400°C (103-2-1-B1)
- ◇ HMDS (L)>>2%H<sub>2</sub>,2h,400°C (XL-92-2)
- HMDS (L)>>2%H<sub>2</sub>,2h,400°C>>HMDS(L) (103-2-I-A1)
- △ HMDS (L)>>2%H<sub>2</sub>,2h,400°C>>HMDS(L)>>2%H<sub>2</sub>,2h,400°C (103-2-I-A2)
- HMDS (L)>>Ar,2h,400°C (103-2-1-B2)  
HMDS (L)>>Ar,2h,400°C>>HMDS(L)>>Ar,2h,400°C (112-1-III-D2)
- × HMDS spin coat>>2%H<sub>2</sub>,2h,400°C>>HMDS spin coat>>2%H<sub>2</sub>,2h,400 C (103-2-1-C1)

Fig. 13